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ASTRONOMY

Big Telescopes to Bring Skies Closer

By James Stokley

The astronomer is never satisfied!

Recently Dr. Edwin Hubble, of the Mt. Wilson Observatory, estimated that he had observed nebulae in the sky so far distant that their light takes 140,000,000 years to reach us. As light travels 186,000 miles in a single second, these distant objects are something like 840 million million million miles away.

And yet the human eye desires to see still farther, and better.

To do this three things are necessary, in the opinion of Dr. Hubble. His views are shared by other astronomers.

First of all, astronomers need better photographic plates.

Then they need more big telescopes in the southern hemisphere.

Lastly, they need one or more supergiant telescopes. Such an instrument has already been planned by Francis G. Pease, builder of the great 100-inch reflecting telescope at Mt. Wilson—the one with which Dr. Hubble worked.

The need of the big telescopes in the southern hemisphere arises from the shape of the globe on which we live. Unless a telescope is precisely on the equator, there is a piece of the sky that it can never observe. If the telescope is in the northern hemisphere, like those in the United States, there is a large circular area, centered at the South Pole of the heavens, which never rises above the horizon at all. And a still larger circle of stars never rises high enough to be really satisfactorily observed.

The equator is not the ideal location for a telescope, however. While on this imaginary line it is theoretically possible to see every star in the heavens at some time or other, those around both poles never rise very high. The best way to do is to have two telescopes. One should be well to the north of the equator, the other well to the south.

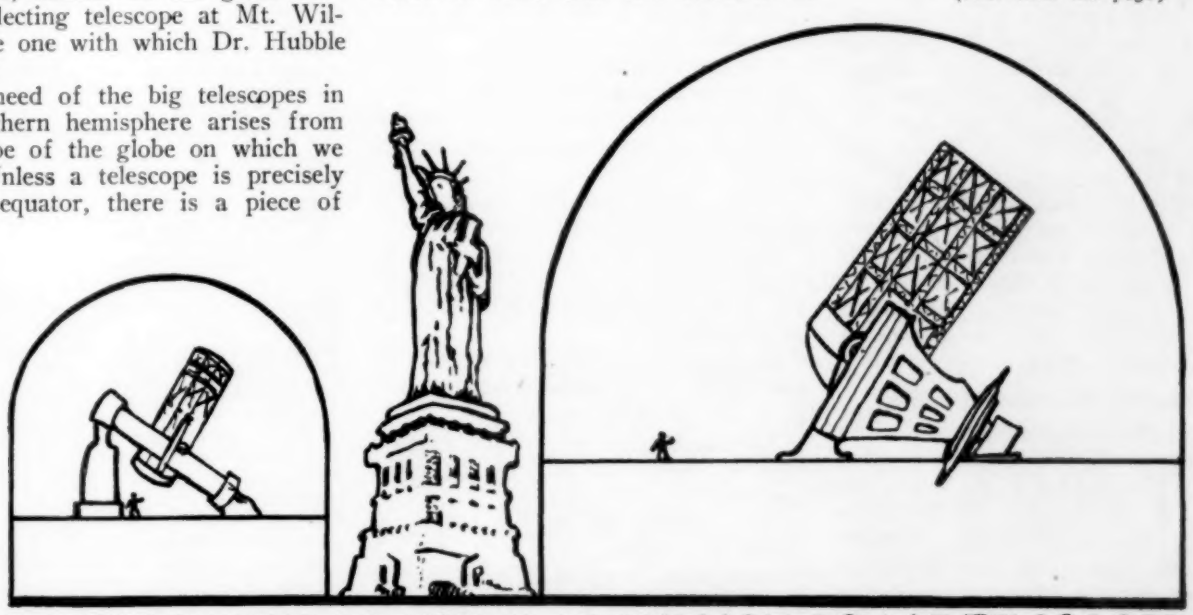
For many years several American observatories have had branches in southern countries. The Lick Observatory, of the University of California, has one in Chile. Here are observed stars that are invisible in California. The observatory of Harvard University has had a branch since 1889 in Peru. Now they are moving to South Africa, where conditions are better.

Largest Southern Telescope

At this branch will be not only the instruments from Peru, but also some new ones. Chief of these will be a great reflecting telescope with a mirror five feet in diameter. This will be the largest telescope in the southern hemisphere. It is already being constructed in a plant in Pittsburgh. This is the same plant that made the six-foot mirror for the big telescope at Victoria, B. C., the largest outside of the United States.

Like all reflecting telescopes, this great instrument will have a mirror which takes the place of the convex lens in the telescope of most familiar type. The mirror is dish-shaped,

(*Just turn the page*)



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Big Telescopes

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and faces the stars. It is at the bottom of the telescope. The light of the star is reflected back from it, and a smaller mirror at the top of the telescope reflects the light to the side. Here it can enter the eye of the astronomer or fall on the sensitive photographic plate.

The Harvard astronomers will have company, even though they are so far away from home. Within the last two years the University of Michigan and Yale University have established branch observatories in South Africa, but at both of these stations are refracting telescopes, not reflectors.

There are other reflecting telescopes in the southern hemisphere, though not as large as the new Harvard one. Nearly a century ago, the great English astronomer Sir John Herchel, took his great 4-foot telescope, at that time one of the largest that had been built, to the Cape of Good Hope. He was the first astronomer to use a large instrument in southern latitudes. From his researches arose the British Royal Observatory at the Cape.

Australia also has a big reflector. This is a more modern instrument than Sir John's, for it was built in 1870. Its mirror is also four feet in diameter. This year it has been overhauled for use in observing Pons-Winnecke comet.

$12,000,000 Telescope Planned

But all these instruments fade into insignificance before a telescope that has been planned by F. G. Pease, designer and constructor of the 100-inch Mt. Wilson telescope. According to Mr. Pease, the principal item necessary for the construction of this monster research instrument is the cost. Twelve million dollars, he estimates, would provide it. A large amount, of course, but only about a third the cost of a modern battleship!

(*Continued on page* 73)

News-Letter Features

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Photographs aid in the telling of the week's science.

Great care is taken to keep its editorial content not only *interesting* but *accurate* as to fact and implication.

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Grow the Plants the Indians Grew

Planting an Indian Garden is an interesting activity. Such a garden had been planted at the Camp Fire Girls' camp in Des Moines, Iowa, and the following is an account of the project.

"I will be very glad to tell you of the Indian Garden which we are having as one of our camp projects this summer. The seeds for our garden were purchased from the Oscar H. Will and Co., pioneer seed house, at Bismarck, N. D. We got from this company the following list of original Indians Seeds:

"1 pkg. Indian Sunflower.
"1 pkg. Assinboine Corn.
"1 pkg. Omaha Pumpkin.
"1 pkg. Gilmore Squash.
"1 pkg. Early Mandan Squash.
"1 pkg. Arikara Yellow Beans.
"1 pkg. Nuetta Sweet Corn.

"The garden is to be a project of the Wo-Ha Order of Hantesa Honor Campers. The Wo-Ha girls are a group of older campers, who have fulfilled the requirements in this Hantesa honor group, and they carry on activities for the betterment and growth of camp throughout the year. They are much interested in this project.

"A week-end at camp was planned at seed-planting time and the girls had lots of fun getting the ground plowed and the seeds planted. They are to sponsor the garden, keep it before the minds of the campers during the summer, and see that proper care is taken of the growing plants. Other campers will be enlisted by them to help in the weeding, hoeing, etc. Plans are being now made for the harvesting of our crop of Indian food. Indian dishes will be cooked and comparisons made with modern grains when the time comes for harvest. The girls are intensely interested and are watching eagerly the growth of their plants."

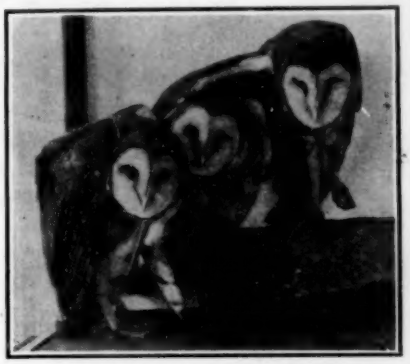
—HARRIET DIVELY,
Camp Fire Girls.

Science News-Letter, July 30, 1927

Indian Crops

When Columbus discovered America he found Indians growing corn, squashes and beans. None of these grew wild in what is now called the United States.

Corn is a native of tropical America. The Mayas cultivated it many centuries B. C. When they were conquered by the Aztecs its cultivation was continued, and by 1000 A. D. it had reached the Eastern States.



AMERICAN BARN OWLS
(Courtesy of American Museum of Natural History)

When Columbus landed it was the principal crop of the agricultural Indians.

Next to maize their most important crop was the common kidney bean. This is a South American plant whose culture spread through Mexico and the United States to Canada. Seeds of it have been discovered in the prehistoric graves of Arizona.

The squash is not known wild but it is thought to be a tropical American plant. The Indians have long cultivated it.

In the 17th century the common sunflower, and the tuberous sunflower (the Jerusalem artichoke) were known to be cultivated by the Indians. These are the only plants in our own gardens developed by the Indians from any of the species native in the United States.

Now they are more extensively cultivated in the old world than in the new.

A few undisturbed fields still remain showing traces of hills where the Indians raised crops of corn. These are now overgrown mounds of earth about 1½ feet high.

Sometimes the rows of cornhills were geometrically regular; sometimes they were not arranged in definite rows; and sometimes beans, pumpkins, tobacco and sunflowers were grown in with the corn. They were also grown in gardens laid out in long narrow beds with paths between them.

The Indians knew how to preserve and store many of their food supplies so that from these crops and from wild plants they obtained food for the winter as well as the summer.

Because of the importance of corn to the Indians they were very grateful to it, and it played an important part in their religion and religious ceremonies.

By some of the tribes rites were observed when the maize was planted, at certain stages of its growth and when it was harvested.

Although the bean and the squash were not objects of religious reverence, appreciation of them is shown in the title given to them by the Iroquois Indians who called them together with corn "our supporters" and the "three sisters."

—AMY FISKE,
Girl Scouts.

Science News-Letter, July 30, 1927

The material on this page is furnished by the Coordinating Council on Native Activities.

Nature Coordination

Realizing the need for a national program that would coordinate the nature activities of national groups working with young people, the American Museum of Natural History invited these volunteer organizations to form a council to be known as the Coordinating Council on Nature Activities for the purpose of teaching the growing generation, through nature activities, the value of all wild life and natural resources and their conservation.

The various organizations represented are as follows:

American Museum of Natural History, American Natural Study Society, Boy Scouts of America, Camp Directors Association, Camp Fire Girls, Inc., Girl Scouts, Inc., Pioneer Youth of America, Playground and Recreation Association, Woodcraft League of America.

Science News-Letter, July 30, 1927

Clay houses are being built in Germany.

About 13,000 farms were sold in the State of Ohio last year.

The crocodile and tortoise are among the longest lived animals.

The Bureau of Standards has measured engraving so small that over 43 million words could have been within a one-inch area.

Certain tribes in Central Africa believe that if they dream of catching fish they will find a big bag of money.

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Suggests T. B. Tests for Poultry

Here are reported some of the proceedings of the Third International Poultry Congress, held at Ottawa, beginning July 27.

The application of the same principles of disease protection to the humble hen that have proved successful in treating human beings and the larger domestic animals was foreseen by Dr. John R. Mohler, chief of the U. S. Bureau of Animal Industry, in his speech before the Third International Poultry Congress, held in Ottawa recently.

The day when it was cheaper and more expedient to destroy a diseased bird or even a whole flock than to call in a veterinary is past. So important is the health of the hen that the extent of such major infectious diseases as tuberculosis among fowls has been mapped out throughout the United States through the cooperation of Federal inspectors and sanitary officials, Dr. Mohler explained.

To check the inroads of avian tuberculosis which threatens not only poultry but the hog industry as well because it is readily communicable to swine, Dr. Mohler suggested the feasibility of the tuberculin testing of fowls. In this way tubercular fowls would be eliminated from a flock in much the same way that infected cows are now tested and dropped from dairy herds. The method is being used to some extent at the present time, he declared, and has no harmful effects on normal healthy birds.

Science News-Letter, July 30, 1927

Setting Hen Back Number

Hatching eggs at home will become practically obsolete in the near future, T. S. Townsley of the Ohio Poultry Improvement Association predicted at the Third International Poultry Congress meeting held in Ottawa recently. Commercial hatcheries are now producing more than one-fourth of the baby chicks of the nation, and there is every reason to expect a rapid increase in their numbers, he declared.

Swapping eggs with a neighbor, buying a new rooster or one setting of eggs are no longer methods on which up-to-date flock owners depend to introduce new blood and keep up the quality of their stock. More and more poultrymen are making a complete change of stock each year by buying their entire supply of chicks ready hatched.

The only job a poor hen has left, with her maternal duties taken away from her, is to lay eggs and yet more eggs. More than 30,000,000 are required, according to the poultry expert, to furnish the one and one-quarter billion hatching eggs necessary to produce the next generation of 568,000,000 chickens raised in the United States every year.

Science News-Letter, July 30, 1927

Shows Egyptian Incubator

The replica of a clay incubator oven that hatched chickens in Egypt centuries ago is one the sights seen at the Third International Poultry Congress, Ottawa, Canada, July 27 to August 4.

The incubation of eggs is an old art in Egypt where the secret of the operation of the great clay ovens was handed down from generation to generation, according to Dr. M. A. Jull, of the U. S. Department of Agriculture, who is already on the ground making arrangements for the American delegation. The oven that will be exhibited has been sent over for the occasion by the Government of Egypt.

Originally the incubators were enormous structures with mud walls several inches thick with holes here and there for ventilation. The interior was divided into "rooms" high enough to admit an attendant to come in to handle the eggs which were placed in layers on the floor around walls and sometimes on ledges half way up. Heat was furnished by fires built in the center of each egg chamber which were regulated by the attendant, who, from living almost constantly inside the oven, became sensitized into a sort of human thermometer needing no other instrument than himself to tell when the air was too hot or too cold for the incubating eggs.

Science News-Letter, July 30, 1927

A Russian chemist has developed a cheap method of extracting iodine from waste waters from oil drillings in Baku oil fields.

Two French scientists have developed a machine which is said to drive a rotor at the dizzy speed of 11,000 revolutions per second.

A commercial process of coloring steel so that it can be used for furniture and ornaments has been invented by an Englishwoman.

FREDERICK GARDNER COTTRELL

Smoke Precipitator

As a dissipator of haze, the activities of Dr. Cottrell have extended far beyond the stacks of the chemical plants that have been robbed of obnoxious fumes and smoke by his process of electrical precipitation.

Chemistry, mining and metallurgy, agriculture and industry have felt the breath of his genius. With characteristic far-sightedness, he has interested himself in the great problem of an international auxiliary language to allow mute civilizations to talk to each other.

Dr. Cottrell's discovery of electrical precipitation was made one evening while working in his laboratory. He was carrying on experimentation that began with a forgotten experiment of Hohlfeld in 1824 who accidentally found that an electrically charged wire caused smoke in a jar to disappear. With the lights out, Cottrell discovered that cotton-covered wires strung across the room to conduct high-tension current were luminous. This showed that the electrodes should be covered with innumerable fine hairy points and led to the construction of a small laboratory precipitator which successfully conquered sulphuric acid fumes. Commercial installations followed which have multiplied so extensively that there is hardly an industry troubled by dust, smoke, fumes, etc., that has not been aided.

Foregoing most of the financial fruits of his invention, Dr. Cottrell formed the Research Corporation from whose profits research work in many fields have been supported.

In the U. S. Bureau of Mines before, during and after the War, and now as director of the Fixed Nitrogen Research Laboratory, Dr. Cottrell has directed, inspired and accomplished the application of chemistry to industrial and agricultural problems.

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ENGINEERING

Aviation and Architecture

Architecture is another profession that is being influenced by the great development of aviation. The design prepared by Frank E. McMillan, superintendent of the Division of Postoffice Quarters and Engineering, for the proposed new Chicago Postoffice, contemplates a great flat roof, 320 feet wide and 800 feet long.

The evolution of architectural styles like all natural evolution is a slow progress following the improved needs of growing intelligence. In America architecture is less than 300 years old. In this brief period of time it has progressed from the log cabin to our modern monumental buildings. It took 1,000 years to produce the Egyptian temple, 500 years to build the Greek temples and 300 years to erect imperial Rome. And never were the demands and requirements as many as today. In materials, in structure and in purpose, the task of the architect is increasingly gigantic. And now the architect's purpose is to be changed if not dominated by our getting into the air.

Not just for the landing spaces are modern cities concerned. An artistic view from the air is demanded. German architects are studying this matter with the intention of recommending improvements in the aspect from the bird's eye.

Therefore, we may expect roof gardens. Also we may not be surprised to see some of the billboards that line the automobile trails go up and lie down on top of the business houses.

Atlanta tells the flying world that it is "Atlanta" by spelling it out on top of one of the highest buildings.

Our future cities will present an entirely different skyline, experts say. Such Gothic buildings as the Woolworth skyscraper and those of Chicago University with points and spikes discouraging to aviators will probably disappear. Lieutenant Bernt Balchen, who piloted the giant "America" through hours of storm and fog over France looking for a place to come down, said in answer to those who were surprised that he could not see the Eiffel Tower: "No, I did not want to see it. I was mighty glad that I did not see it."

Houseflies are a pest almost all over the world.

METEOROLOGY

Weather From Asia?

Study of weather conditions in interior Asia may help predict rainfall in California several months in advance. This is the opinion of E. A. Beals, of Alameda, who presents the results of his studies in a report to the American Meteorological Society.

"From a daily study of weather maps prepared under my supervision at Portland, San Francisco, and Honolulu for a quarter of a century," says Mr. Beals, "I have come to the conclusion that the most hopeful solution of the problem of long range forecasting in California lies in getting more detailed information about the winter high pressure center of action over Asia. Very little is known about this disturbance for the reason that the Chinese and Mongolians have not been interested in making weather observations along modern lines. The Russians have many meteorological stations in Siberia, but as our government does not recognize the Russian government, the recent data they have accumulated cannot be officially procured by the United States Weather Bureau, though it can be obtained by private individuals by corresponding directly with the Russian weather observers.

"To California, the track the storm takes after leaving the Aleutian Islands on its way to the United States, is vital. The full maturing of our crops cannot take place without sufficient moisture, and much money and labor could be saved, or adequate preparations made, if the amount to be expected could be told with reasonable accuracy in advance. If the track the storms take from the Aleutian Islands is northern, we get no rain; if the storm enters the United States south of the mouth

(*Just turn the page*)

ARCHÆOLOGY

Prehistoric Mirror Found

How the Aztecs and Maya Indians of prehistoric Mexico "got their faces on straight" is explained by Dr. Porfirio Aguirre of the department of archæology of the Mexican National Museum, who recently returned from the state of Michoacan with a seven-inch hand mirror which he found under many feet of earth.

The mirror is a round disk of pyrite. The surface which was once highly polished is now rough and broken.

PALEOPATHOLOGY

30,000 Mummy Autopsies

Few if any of the ancient Egyptians suffered from syphilis, members of the hoi polloi had far better teeth than the ruling classes and Pharaoh Siptah of the nineteenth dynasty had a club foot. Such are some of the health facts about life in the valley of the Nile from three to six thousand years ago gleaned by recent research undertaken by Dr. Arnold Sach, of Heidelberg University.

Dr. Sach has just completed a detailed pathological examination of over 30,000 mummies in the hope of gaining some insight into the health conditions among the ancient Egyptians, a point of great interest to modern medicine because the Egyptians were known to have a comparatively highly developed art of healing. Malformations and bone fractures were the obvious things that come to the scientist's attention first and in many cases the mummies were found still wearing artfully contrived splints. Bladder stones were found in mummies dating back to periods before the earliest dynasties, indicating that this affliction was present from very remote times. Stones in the kidney did not appear until 3200 B. C.

Degenerating teeth are evidently one of the prices mankind has always had to pay for an advancing civilization. Bad teeth were rare during the early period of Egyptian history, Dr. Sach found, and in the poorer population almost entirely

(*Just turn the page*)

SOCIOLOGY

Prohibition Investigated

Prohibition and the Eighteenth Amendment, do they work? This is the problem planned to be extensively investigated by a committee of social science experts under the guidance of the Social Science Research Council at Chicago. Nearly a half million dollars, according to budget figures contained in the council's report just issued, will be spent on this survey. No report will be issued for some time since the study is now in its preliminary stages and is expected to require three years for completion.

Crime and justice, the effect of widespread introduction of machinery into industry, human migration, juvenile delinquency, labor markets, pioneer belts, and many other investigations are being conducted.

Mummy Autopsies

(*Continued from page* 71)

lacking. They were fairly frequent, however, in the royal mouths of kings and the teeth of 500 mummified remains of Egyptians of the highest class, excavated near Gizeh, showed nearly as much tartar formation and dental caries as those of modern Europeans. The sweetmeats of Cleopatra's banquets obviously had drawbacks.

Dr. Sach's researches constitute an argument for the negative in the controversy over the presence of syphilis in the ancient world, for no changes indicative of this disease could be detected in any of the mummies examined. The only case of leprosy occurred in one dating from the late Christian era which strengthens the assumption that has been made that the leprosy of Biblical times is not the disease that we know. It is now thought that the leprosy of antiquity is a malady quite different from that which goes under the name at the present time and its exact nature can only be explained by further research in historical medicine.

Science News-Letter, July 30, 1927

An insect's skeleton is on the outside of its body.

The glaciers in the Canadian Rocky Mountains are retreating.

The United States uses more than half the world's output of tin.

Mother cockles, or Venus shells, were made into strings of wampum by some of the Indian tribes.

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Weather from Asia

(*Continued from page* 71)

of the Columbia River, we do get rain; and the farther south the track the greater the amount.

"I am convinced that the route they will take depends largely on the behavior of the winter high pressure centers of action over Asia.

By the term "centers of action," says Mr. Beals, he refers to rather complicated weather phenomena. These are large areas on the earth's surface where the barometer remains relatively high or low for a long period of time. Eight such centers are known, of which four influence the Pacific weather. The principal one is the area which covers nearly all of Asia, except in the summer. Another is located over western North America, and for much of the time it reaches out over the Pacific. An important low pressure area extends over the Aleutian Islands and, like the other two, disappears in the summer. At that time, says Mr. Beals, a large high pressure area appears over more than half of the north Pacific Ocean.

Science News-Letter, July 30, 1927

The U. S. Bureau of Standards is making experiments designed to improve enamels used in kitchen ware.

Five airplanes in Kansas recently helped to search for a bandit escaping in an automobile.

Electric refrigeration is being used in powder magazines of battleships to keep the powder cool.

An international medical code, to aid doctorless ships in getting medical advice by wireless, is being devised.

At the volcano observatory in Hawaii National Park 1,801 disturbances of the earth were registered in 1926.

A few corn borer worms in shredded cornstalks do not spoil the food for cattle, says the Department of Agriculture.

The same gas that bakes pies in the kitchen oven is now used to carve intricate patterns in steel plate and to cut steel billets 20 inches thick.

That physically handicapped people make efficient workers is indicated by the fact that 30 per cent of the 44,500 workers in the Ford plant are "sub-standard."

MEMORANDUM

This blank space serves a dual purpose. It allows you to clip out the article on the reverse of this page without destroying any other article. It can also be used for notes and the recording of your own observations.

FRANCIS G. PEASE, builder of the 100-inch telescope, who has planned one three times as large, to cost an estimated total $12,000,000

Big Telescopes

(*Continued from page 66*)

And how much more good would the telescope do for the world than the battleship, for it would increase man's knowledge of the universe about him!

There are mechanical difficulties to be solved before such an instrument could be made, it is true. However, Mr. Pease probably knows more about such matters than any man living. This is what he says:

"The question has often been asked 'How large a telescope can be built today?' My reply would be that anything up to a hundred feet in aperture can be built provided one wants to pay for it."

One of the problems to be solved is the material of which to make the mirror. Present telescope mirrors are mostly made of glass. On this is coated a layer of silver to reflect the light, much as in the ordinary looking glass. The chief difference is that the telescope mirror is silvered on the front instead of the back. Hold a coin to your looking glass and you will see the reason. In the glass you see two coins, one bright, reflected from the silver on back, and one faint, reflected from the glass surface. In astronomy such a double image would be a serious defect. So the silver is coated on the front, and is renewed occasionally.

However, in the large size contemplated there might be some defects of a block of glass as huge as would be required. Glass transmits heat slowly. When the temperature goes down, the great mirror would cool on its surface sooner than inside. The result would be that the outside would contract a little and the mirror would be slightly twisted until it reached the same temperature throughout. Though very minute, the twisting would be enough to be serious in accurate observing. So it may be that some metallic alloy, which transmits heat quickly to its interior, will prove better than glass.

Faster Photographic Plates

But astronomy doesn't want merely bigger telescopes. Even more welcome to the world of star-gazers would be better and faster photographic plates. Most astronomical observations today are made with the aid of photography. If you visit the modern astronomer at an observatory, you are not likely to find him peering through a telescope. Instead, you will probably find him looking through a microscope at a photographic negative made with the telescope.

In a single night at a big observatory enough photographs might be made to keep the astronomers busy for a month. The plate has one great advantage over the eye because it doesn't get tired. If you look through a telescope, you see as much in the first second as you will see if you look steadily for an hour. Of course, if there is a lot of fine detail, it may take time to give it careful scrutiny. But long gazing doesn't make details visible which were at first invisible. In fact, the eye gets tired, and really sees less after prolonged looking than at first.

The photographic plate is untiring. If a star of a certain brightness can be photographed in five minutes, one half as bright can be photographed in ten minutes, or one a quarter as bright in twenty. Some nebulae are so faint that even in the great Mt. Wilson telescope they can not be seen with the eye. But when a photograph of one is made with a long exposure, it is revealed in all its glory. Sometimes exposures as long as twenty or thirty hours are made, on several nights. All night long the plate is exposed, and then covered at the approach of dawn. Then the next night it is again uncovered, and it is kept pointed at the object for all of that night. In this way things are seen in the sky that without photography would have remained ever beyond our ken.

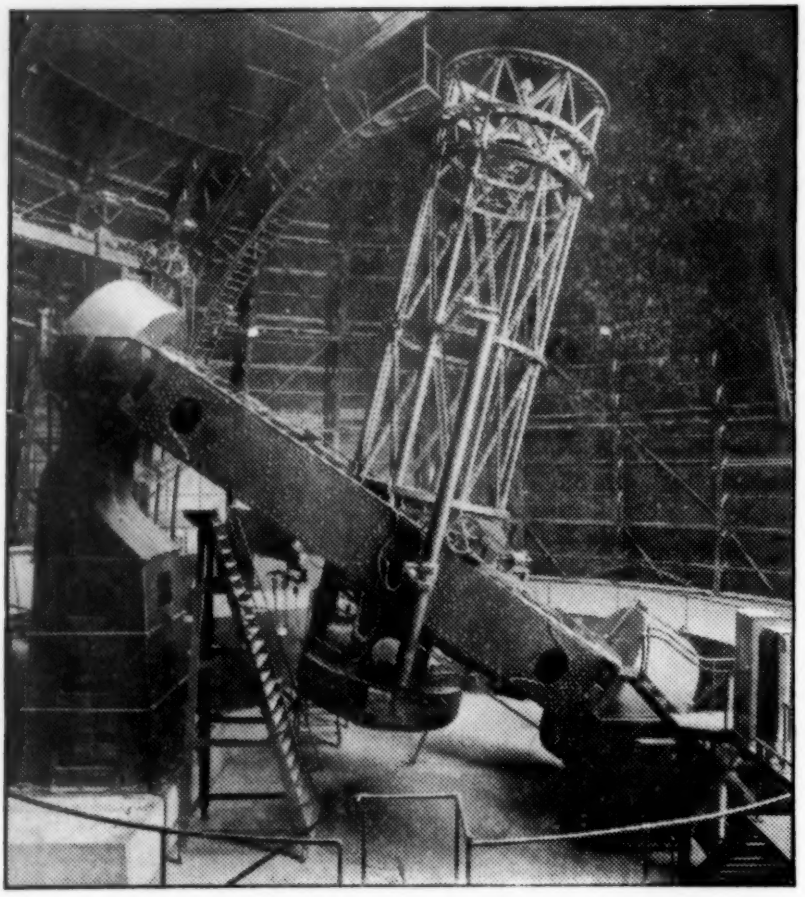
But photographic plates are not perfect. Some are more sensitive to light than others. The fast plates that the newspaper photographers use in their cameras record a scene even in poor light in a fraction of a second. The "wet plates" that the photo-engraver used in making the illustrations for this article require long exposures with brilliant arc lights.

Fast Plates Show "Grain"

It might then seem that the astronomer should merely use the same kind of plates as the newspaper

(*Just turn the page*)

GREAT NEBULA IN ORION, photographed with the 100-inch telescope. Such objects as these would be shown in far greater detail with a still larger telescope, such as Mr. Pease has planned



ONE HUNDRED-INCH REFLECTING TELESCOPE of the Mt. Wilson Observatory in California, now the largest in the world

Big Telescopes

(*Continued from page* 73)

camera man. However, as soon as you begin to magnify the picture on one of these plates, the "grain" appears. It is like looking at a halftone reproduction of the photograph of Mr. Pease on this page. As soon as you look at it through a magnifying glass, the dots that make up the picture become so evident that the picture is no longer recognizable. In the plate, the grain is irregular, unlike the uniform rows of dots, but it is no less troublesome.

The plate of the photoengraver does not suffer from this defect. Even with the most powerful microscope, no one has ever seen the grain of a wet plate of this kind. But the astronomer cannot use it, because it would take such long exposures. He has to compromise on a fairly fast plate, with a fairly fine grain.

What a boon it would be for him if he had a plate as fast as the news plate and as grainless as the wet plate! Perhaps this is an ideal impossible of attainment, but photographic research laboratories are working on the problem. Even a plate twice as fast as those used at present and with no coarser grain would mean that every existing photographic telescope would immediately have its light-gathering power doubled. So perhaps the next great advance in astronomy will originate in the chemical laboratory of a photographic plate factory!

This was the idea expressed by Dr. Hubble. In his estimation, the needs of astronomers at present are threefold. First of all, is needed better and faster plates. And then, comes more large telescopes in the southern hemisphere. Last of all comes the great telescopes surpassing in size the present instruments. When they have all three of these things, the astronomers of the world will doubtless think that the millenium has arrived!

Science News-Letter, July 30, 1927

The star-gazer fish has eyes on the top of its head.

Railway trains of aluminum are being built in Germany.

Italy exports three-fourths of the automobiles it manufactures.

Artificial silk fiber is more regular than fiber made by silkworms.

The earliest tobacco pipe was probably only a hollow reed or a roll of bark.

A huge organ just completed in Liverpool Cathedral, in England, has 10,934 pipes.

Rubber building blocks are a recent novelty to make house building safer for children.

The United States Forest Service is investigating the question of what trees are most often struck by lightning.

Natural heat from the Kilauea volcano is used to heat the superintendent's office in the Hawaii National Park.

The stones used in the Egyptian pyramids must have been brought from great distances, as no quarries exist near these monuments.

Ancient inhabitants of Peru often made pottery jars in the shape of vegetables, such as ears of corn, squash, potatoes, and beans.

The hairnet industry in Chefoo, China, kept 17,000 women and girls busy in 1921; but now only about 2,000 make a living at this work.

European grapes, such as Malagas, Hamburgs and Tokays, have been experimentally grown in New York, and horticulturists say they may, with care, succeed in eastern grape districts.

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BIOLOGY

NATURE RAMBLINGS

By FRANK THONE

Hay Fever Weeds

Thousands upon thousands of hay fever sufferers are sneezing their lives into a lingering misery, or fleeing to mountains or sea from a country that has become accursed to them. For the ragweeds, the chiefest offenders against sensitive mucous membranes, are in bloom, and scattering billions of grains of their light, dusty pollen to all the breezes. If the ancient Persian priests, who believed that the world was equally the work of the good and evil principles, had known the ragweeds, they would unquestionably have assigned them rank among the chiefest creations of Ahriman, the Bad, and would have gone forth armed with scythes to do a meritorious act by mowing them down.

There are two species of ragweed common in this country. The tall ragweed is a terrific grower, making rank jungles twelve or fifteen feet in height, and taking possession of whole acres of rich, moist soil in swales and roadside ditches, and along river bottoms. Its leaves are broad and coarse, and are divided into three main lobes, whence its specific name, *trifida*. It is hard to eradicate completely, but so easy to sweep down with a heavy scythe that there is little excuse for permitting it to reach the pollen-forming stage in closely settled communities.

The low ragweed has finely divided leaves, like those of a carrot though somewhat coarser. Its height averages only about waist-high. Like its giant cousin it likes rich soil, but can get along perfectly well on considerably less water. It has a habit of invading dry pastures and turning them into weed patches, for it is so bitter that not even a goat will eat it. It is much harder to keep down than the tall ragweed, for it branches freely and bears clusters of pollen-scattering flowers on each branch.

GEOLOGY

Clay Tells of Ice Age

In the Hackensack meadows of New Jersey, previously famed for their mosquitoes, there has been found a natural calendar record of the retreat of the last great ice sheet that covered America not less than 20,000 years ago.

The clays that form the meadows tell a graphic story of the northward retreat of the ice.

Dr. Chester A. Reeds, of the American Museum of Natural History, will head an expedition to these meadows this summer to complete his study of the clays. For the last few years he has been collecting glacial clays from the Hackensack valley and other points along the Hudson. He has analysed and tabulated his findings to date. These findings plus the results of this summer's expedition will present in compressed form the geological history of this part of the country at the close of the last ice age.

The clay deposits tell their tale in this manner: With the gradual retreat of the ice fresh-water lakes formed in the lower portions of the enclosed basins in front of the glaciers. During the warm summer months of each year the ice melted and retreated a little to the north. With the melting process swollen rivers which flowed out from under the ice mass picked up fine sand and clay particles and carried them down to the lakes. These particles collected in the still waters of the lakes. The heavier particles of fine sand and coarse clay settled on the lake bottoms to form the sandy summer layer. The finer clay particles were held in suspension in the milky water throughout the summer. But with the coming of winter even the fine particles sank and covered the lake beds with a dark deposit of pure clay. By the next summer the water was clear again and the process repeated itself. Thus a sharp line has been drawn between summer and winter deposits. The summer deposits are sandy and light in color; the winter deposits, pure, dark clay.

By excavating the clay just as it stands and by the tedious process of counting the light and dark layers Dr. Reeds is able to trace the northward movement of the ice. Two deposits, a light summer layer and a dark winter one, equal a year. Dr. Reeds has already found in a forty-five foot depth of clay a continuous

(*Just turn the page*)

ARCHÆOLOGY

Indian Mound Hides Graves

A large Indian mound near Bainbridge, Ohio, is being sliced like a loaf of bread by exploring archaeologists who have found thirty Indian burials and a complicated internal structure.

What appears to be an elongate earthen pyramid is buried under the external surface of the so-called Seip mound. Seen from the outside the mound looked merely like a great rounded heap of earth, 240 feet long, 150 feet wide and 300 feet high.

The basis of the mound is a lower mound, shorter and narrower than the covering structure, rounded on top and covered with a layer of gravel. Presumably this lower mound was for ceremonial purposes for under it are found the Indian burials. Covering this inner mound is a mass of earth with steeply sloping sides, like the roof of a house or a long pyramid, and over this in turn there is another mass of earth, noticeably different from the "pyramid" in color and texture, which gives the outer mound its final rounded shape. Over this again is a layer of river gravel, thin at the top and thicker at the sides and held in place at the bottom by a wall of large stone slabs. All this great hill of earth was toilsomely built many centuries ago, by Indians whose only way of carrying it was in baskets on their backs or heads.

The peculiar and puzzling structure of this mound has been disclosed only by the methodical system pursued in opening it. The work is being done under the direction of Dr.

(*Just turn the page*)

ARCHÆOLOGY

To Study Ancient Races

Evidence of the antiquity of man, from the caves of Europe and the deserts of the Near East, will be collected this year by an expedition of the Field Museum of Natural History of Chicago, headed by Henry Field, anthropologist. From the caves and anthropological sites of France, Spain, Germany, Austria, Hungary and Czecho-Slovakia, Jugo-Slavia, Switzerland and Belgium there will be brought specimens and artifacts, together with notes, sketches and plaster casts to be used in exhibits in the Field Museum's proposed hall of prehistoric man. Mr. Field will also visit the North Arabian desert and the excavations of Kish in Mesopotamia.

Indian Mound

(*Continued from page 75*)

H. C. Shetrone, of the Ohio State Archeological and Historical Society. He has a gang of workmen and dirt-handling machinery at his disposal, in addition to a group of research students to do the more exact work. Every cubic foot of earth in the mound is being moved. He is cutting off the mound slice by slice examining everything he finds as he goes. Before snow flies he expects to cut his last slice. Then he will put the mound back into as nearly its original form as practicable.

To date, he has sliced off a little more than half the mound, and has uncovered about thirty Indian burials. Almost all of them are just above ground level, under the inner mound. A few are three or four feet higher. These latter were important chiefs, judging by the burial gifts found with them, which included great strings of river-mussel pearls in addition to the usual stone, bone and pottery offerings, and ornaments and weapons of copper.

Science News-Letter, July 30, 1927

The oldest known birds had teeth.

Siberia has 2,000,000 domestic reindeer.

Catalina Island, off California, has large deposits of silver.

The first public high school was established in Boston in 1821.

Indian baskets show eight different stitches or ways of weaving.

The opossum is found in 29 states and is partially protected in 24 of these.

Submarines now built can carry enough oil to take them around the world.

Roses thrive in well drained soil, but rot quickly if the ground is water soaked.

A poultice described in an Egyptian record of 1552 B. C. calls for 35 different ingredients.

German passenger airplanes are now equipped with fire extinguishers that operate automatically the instant a carburetor fire starts.

A list of fruit varieties compiled by New York agriculturists includes 2,929 kinds of pears, 1,700 plums, 1,300 peaches, and 650 apples.

Ice Age

(*Continued from page 75*)

series of layers representing 2,550 years for the deposition of material as the ice-front moved slowly northward up the Hackensack valley. Deeper deposits are found to the south than to the north which shows that when the glacier still covered the northern part of the valley the southern end was gradually loosening from the grip of the ice. By comparing deposits throughout the length of the valley Dr. Reeds can trace the movement of the glacier through the years and the history of the return of a temperate climate.

Science News-Letter, July 30, 1927

More than half the world's population is in Asia.

The only diamond mine in this country is in Arkansas.

The oldest known boats belonged to prehistoric men of the late Stone Age.

France has 27 aviation beacon lights, though night flying is rare in France.

Mosquitoes in Florida swamps are being fought by poison gas spread by airplanes.

Stone axes of prehistoric Indians in Maine sometimes weighed as much as 12 pounds.

The raccoon is sometimes called the "wash bear" because he washes his food before eating it.

There are about 18 spoken languages or dialects in China, but only one written language.

The Chinese paradise fish becomes so tame in an aquarium that it will take food from a person's hand.

Pigeon hawks are called "pirates of the air" because they daringly attack birds three times their size.

The blending of soft colors in gem stones, such as agate, is being copied for two-toned automobile bodies.

Australia's new capital city, Canberra, is to be 12 miles square and is designed for a population of 2,000,000.

Pennsylvania is the leading mineral producing state in the Union, Oklahoma comes second and California third.

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WMAL	The Washington Radio Forum, Washington, D. C.
WMAQ	Chicago Daily News, Chicago, Ill.
WOO	John Wanamaker, Philadelphia, Pa.
WRAV	Antioch College, Yellow Springs, Ohio.

Watch the program of the station nearest you to see what time these talks are given. If no station near you gives them, write us, suggesting any station that you think might give them.

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First Glances at New Books

A MANUAL OF RADIOACTIVITY—George Hevesy and Fritz Paneth—*Oxford Univ.* In the thirty years since Henri Becquerel, Madame Curie, and others inaugurated the study of radioactivity, many books have appeared on the subject. Some have been popular, some technical, and others in between, but so far, there seems to have been none that systematically and exhaustively develop the whole subject in the manner of a text-book. This book does that very thing, assumes no special previous knowledge and includes such phases of the problem as the determination of the earth's age by radium-bearing minerals.

Science News-Letter, July 30, 1927

BRIEF PHYSIOGRAPHY—Willard B. Nelson—*Globe* ($.67). Here in 175 pages is contained a complete outline of physical geography that should be useful to the teacher as well as to the student. An appendix contains specimen examination papers.

Science News-Letter, July 30, 1927

CHEMISTRY EXPERIMENT SHEETS—Martin Mendel and Milton B. Brundage—*Globe* ($.80). A well designed and usable combination chemical laboratory guide and student's laboratory notebook.

Science News-Letter, July 30, 1927

DISTRIBUTION OF MOCCASIN DECORATIONS AMONG THE PLAINS TRIBES, Anthropological Papers, Vol. 29, Part I—*American Museum of Natural History* ($.25). The bead and quill work on moccasins of 28 tribes, during the period 1890 to 1915, is the material used in this study, which indicates that differences between the plains tribes in this respect are in small variations in technique rather than in the elements of the art itself.

Science News-Letter, July 30, 1927

SOCIAL FACTORS IN MEDICAL PROGRESS — Bernhard J. Stern — *Columbia University Press* ($2.25). The history of medicine reviewed by a sociologist. Special attention is given to determining psychological reasons at the bottom of popular resistance to medical innovations. Interesting discussion over past rows raised in learned circles over dissection, circulation of the blood, vaccination, etc., etc.,

Science News-Letter, July 30, 1927

AN OUTLINE OF CAREERS—Edward L. Bernays—*Doran* ($5). For the teacher, the clergyman, the scoutmaster, or any older person whom young people are apt to consult about their future life work, this is a book which is surely needed. Thirty-eight internationally known men and women, each an outstanding representative of his own business or profession, discuss the chances in their fields, which range from "Accountancy" to "Writing." The section "Scientific Research" is written by Dr. Vernon Kellogg, permanent secretary of the National Research Council, and chairman of the executive committee of Science Service. Prof. Samuel R. Powers, of Columbia, contributes the chapter on applied science.

Science News-Letter, July 30, 1927

SELENIUM—Marion Foster Doty—*New York Public Library.* A complete bibliography of 1665 books and papers relating to this interesting element which transmits electricity when illuminated.

Science News-Letter, July 30, 1927

THE RAYON INDUSTRY—Mois H. Avram—*Van Nostrand* ($10). No tale of the Arabian Nights is more wonderful than the modern tale of how the trees of our forests are made into silky fibers which adorn our bodies as socks, shirts and dresses. Here is told the complete story, how this magic has developed into an important industry. In 1923, for instance, we learn, nearly $5,000,000 worth of rayon hosiery alone was exported from the United States. But the book is no dry collection of figures, for details of the processes, and many other important facts are given.

Science News-Letter, July 30, 1927

THE BEGINNING OF POTTERY MAKING IN THE SAN JUAN AREA; UNFIRED PROTOTYPES AND THE WARES OF THE EARLIEST CERAMIC PERIOD—Anthropological Papers Vol. 28, Part II — *American Museum of Natural History* ($1). A careful study, well illustrated, of the development of pottery in the country around the San Juan River, up to the end of the Post Basket Maker period. Mr. Morris shows that in this region "pottery-making has been traced back to and almost beyond its beginnings with a definiteness which has not been paralleled or even approached anywhere else on the continent." The sequence will be carried on in a future publication.

Science News-Letter, July 30, 1927

AIRPORTS AND AIRWAYS—Donald Duke—*The Ronald Press Company,* N. Y. ($5). The author is first lieutenant in the Air Corps, U. S. A., and one of those specialists writing authoritative information for the Ronald Aeronautic Library. As each city has its individual traffic problems, so it may anticipate similar problems in dealing with increased air traffic. While in no sense a handbook on the subject, this volume may be used as a reliable source of information on the basic factors affecting airport operation and air commerce development.

Science News-Letter, July 30, 1927

A PSYCHOLOGICAL AND EDUCATIONAL SURVEY OF 1916 PRISONERS IN THE WESTERN PENITENTIARY OF PENNSYLVANIA—William T. Root, Jr. — *Western Penitentiary.* Much information on prisoners is recorded in this survey report, with a view to finding out how more of the people who become criminals can be salvaged, and at the same time how society can best be protected.

Science News-Letter, July 30, 1927

ACROSS ARCTIC AMERICA—Knud Rasmussen—*Putman.* A great epic of a great exploration, geographical and ethnological, into the American Arctic. Rasmussen's story was first presented to the public through newspaper articles issued by Science Service.

Science News-Letter, July 30, 1927

HEREDITY—A. Franklin Shull—*McGraw-Hill.* Here is the story of heredity from the chromosome to the last dying cell, from amoeba to man, prepared for college use. Professor Shull is an authority.

Science News-Letter, July 30, 1927

YOUR MONEY'S WORTH — Stuart Chase and F. J. Schlink—*Macmillan* ($2). This book gives some hint of just how we, the poor consumers, waste our dollars when we spend them. It is a first reader geography of the dangers that beset Alice in the Wonderland of high pressure salesmanship.

Science News-Letter, July 30, 1927

MILBANK MEMORIAL FUND—Report for 1926. As a progress report upon the vital and interesting public health demonstration in Cattaraugus County, New York, Syracuse, New York, and in the city of New York, this report is a real contribution to better living.

Science News-Letter, July 30, 1927

Feature of News-Letter How to Use Key-Word

In order to aid in catching the items that concern you and to facilitate clipping and filing, a key word in small capitals has been printed on the right of the line above each article. The key words used fit into any system of classification, whether it be a straight alphabetical file, a system of your own devising, the Library of Congress classification or the Dewey system.

Note that you can slip out any article without fear of damaging another article in which you might be interested, since editorial matter printed on the right-hand pages is backed by advertising, standing matter or a continuation of the article on the other side.

Library of Congress Classification

The classification of the Library of Congress has come into common use in the libraries of the country owing to the publication of the Government of the card index of all new books. We print below a list of the subject titles which are most used in the SCIENCE NEWS-LETTER. The full scheme of classification is contained in "Outline Scheme of Classes," issued by the Library of Congress.

A General Works. Polygraphy.
B Philosophy.
BF Psychology.
G Geography, voyages, travel.
GA Mathematical and astronomical geography.
GB Physical geography.
GC Oceanology and oceanography.
GF Anthropogeography.
GN Anthropology. Somatology. Ethnology. Ethnography. Prehistoric archæology.
GR Folklore.
GT Manners and customs.
GV Sports and amusements. Games.
HC Economic history and conditions. National production.
HD Economic history. Agriculture and Industries.
HE Transportation and communication.
HF Commerce.
HM Sociology. General.
HQ Family. Marriage. Woman.
HV Social pathology.
L Education.
M Music.
N Fine arts.
P Philology and linguistics.
Q Science. General.
QA Mathematics.
QB Astronomy.
QC Physics.
QD Chemistry.
QE Geology.
QH Natural history.
QK Botany.
QL Zoology.
QM Human anatomy.
QP Physiology.
QR Bacteriology.
R Medicine. General.
S Agriculture. General.
SB Field crops. Horticulture. Landscape gardening. Pests and plant diseases.
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SF Animal culture. Veterinary medicine.
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TC Hydraulic engineering.
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TG Bridges and roofs.
TH Building construction.
TJ Mechanical engineering.
TK Electrical engineering and industries.
TL Motor vehicles. Cycles. Aeronautics.
TN Mineral industries. Mining and Metallurgy.
TP Chemical technology.
TR Photography.
TS Manufactures.
TT Trades.
TX Domestic science.
U Military science. General.
V Naval science. General.

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000 GENERAL WORKS—
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020 Library economy
030 General cyclopedias
040 General collected essays
050 General periodicals
060 General societies
070 Newspapers
080 Special libraries. Polygraphy.
090 Book rarities
100 PHILOSOPHY—
110 Metaphysics
120 Special metaphysical topics
130 Mind and body
140 Philosophical systems
150 Mental faculties. Psychology
160 Logic
170 Ethics
180 Ancient philosophers
190 Modern philosophers
200 RELIGION—
210 Natural theology
220 Bible
230 Doctrinal. Dogmatics. Theology
240 Devotional. Practical
250 Homiletic. Pastoral. Parochial
260 Church. Institutions. Work
270 Religious history
280 Christian churches and sects
290 Ethnic. Non-Christian
300 SOCIOLOGY—
310 Statistics
320 Political science
330 Political economy
340 Law
350 Administration
360 Associations. Institutions
370 Education
380 Commerce. Communication
390 Customs. Costumes. Folklore
400 PHILOLOGY—
410 Comparative
420 English
430 German
440 French
450 Italian
460 Spanish
470 Latin
480 Greek
490 Minor Languages
500 NATURAL SCIENCE—
510 Mathematics
520 Astronomy
530 Physics
540 Chemistry
550 Geology
560 Paleontology
570 Biology
580 Botany
590 Zoology
600 USEFUL ARTS—
610 Medicine
620 Engineering
630 Agriculture
640 Domestic economy
650 Communication. Commerce
660 Chemical technology
670 Manufactures
680 Mechanic trades
690 Building
700 FINE ARTS—
710 Landscape gardening
720 Architecture
730 Sculpture
740 Drawing. Decoration. Design
750 Painting
760 Engraving
770 Photography
780 Music
790 Amusement
800 LITERATURE—
810 American
820 English
830 German
840 French
850 Italian
860 Spanish
870 Latin
880 Greek
890 Minor languages
900 HISTORY—
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Anniversaries of Science

August 7, 1807 — Robert Fulton's steamboat the Clermont made its first trip from New York to Albany.

When only thirteen, Fulton's dream of conquering the waters with a force stronger than that of poles or oars began to be realized, for at that age he constructed a boat which he moved with side paddle-wheels. . . He studied what English and French engineers had done on the subject, then returned to the United States, intent on bringing his experiments to a successful issue. As Fulton himself often said, he never claimed the idea of the steamboat as his own, but only the ability to make a steam-driven vessel which could be operated with practical success.

Before he left Europe he had shipped to New York a good steam-engine from the famous works of Boulton and Watt, at Soho. On his arrival in America he began the construction of the wooden hull of the steamboat, later named the *Clermont* in honor of the Livingstons' country-seat up the Hudson River. A memorable year was 1807, in which *Fulton's Folly*, as the scoffers had called the *Clermont*, ended her trip from New York city up the Hudson, to Albany. She had made the run of 150 miles in thirty-two hours, which gave her a speed of nearly five miles an hour and a good margin over the four miles required in order to maintain an exclusive grant for steam navigation in the waters of the Empire State. There was a stop overnight at Clermont, the chancellor's estate, where congratulations were showered upon the promoters. Thus, for the first time on any river, was steam navigation on a large scale made a commercial success.

—Harrington in *A Popular History of American Invention.*

Science News-Letter, July 30, 1927

August 7, 1869—The hypothetical element "coronium" was discovered during an important solar eclipse which was observed clear across the United States.

Fortunately, clear skies greeted the observing parties. Little of the important work accomplished will be noted in detail here. Spectroscopically, the most valuable discovery was that the spectrum of the corona was continuous but was traversed by a single green ray. This green line was detected independently by both Harkness and Young, the latter identifying its position as coinciding with the line numbered 1474 on Kirchoff's scale. But since this line 1474 is due to iron, it was surprising and perplexing in the highest degree to find it present in the corona and reaching such great heights above the sun's surface. In spite of the apparent coincidence, it was evident that the substance causing the green line was not iron. To it the name *coronium* was given—and today after more than half a century of active research we know little more of coronium than when it was first discovered.

—Mitchell: *Eclipses of the Sun.*

Science News-Letter, July 30, 1927

August 9, 1829—The first locomotive to run in commercial service in the United States, the "Stourbridge Lion," was placed on the tracks of the Delaware and Hudson Canal Co. at Honesdale, Pennsylvania, with Horatio Allen at the throttle.

The "Stourbridge Lion," built at Stourbridge, England, was the first locomotive that ran in commercial service in America. In August, 1829, with Horatio Allen at the throttle, the engine made its trial trip. It had two vertical cylinders operating two overhead walking beams, from which connecting rods ran to the driving wheels, and must have appeared like a marine engine on wheels. . . .

In 1884 Mr. Allen wrote the following humorous account of the first American trial of the "Stourbridge Lion":

"When the time came, and the steam was of the right pressure, and all was ready, I took my position on the platform of the locomotive alone, and with my hand on the throttle-valve handle, said: 'If there is any danger in this ride it is not necessary that the life and limbs of more than one be subjected to danger.'

"The locomotive, having no train behind it, answered at once to the movement of the hand; . . . soon the straight line was run over, the curve was reached and passed before there was time to think as to its not being passed safely, and soon I was out of sight in the three miles ride alone in the woods of Pennsylvania. I had never run a locomotive nor any other engine before; I have never run one since."

—Bannard and Kaempffert in *A Popular History of American Invention.*

Science News-Letter, July 30, 1927

BACTERIOLOGY

"Hard Boiled" Bacteria

Disease causing bacteria have many devices to perpetuate their kind in an adverse world. Bacteriologists of the Hooper Foundation for Medical Research, University of California, have shown that tetanus spores may resist the temperature of boiling water for ninety minutes, botulinus in vegetable juices for five and one-half hours and those of a closely related but harmless species for eight and one-half hours. Other workers have proved that typhoid and other organisms may remain alive for years at refrigerator or lower temperatures.

This happy provision of nature—happy, that is for the bacteria—constitutes a factor of great danger for man and animals which it is the function of scientific research to obviate, says Dr. George E. Coleman, of the Hooper Foundation. "The brilliant success," he states, "that has been attained already, in which the experimental use of mice and guinea pigs has played a large part, is constantly being proclaimed by statistical evidence of fewer food poisonings and typhoid fever outbreaks as well as by increased protection from many of our other microscopic foes."

Science News-Letter, July 30, 1927

ENTOMOLOGY

The Fly

In the progress down the ages, numbered in a million stages,
In the course of evolution from the primitive confusion
'neath the sky,
Hatching out in horse manure when there wasn't any sewer,
Rose a pesky little varmint called the fly.

On the numberless fine bristles of his tibiae and tarsi
Ride a milion streptococci, vibrios and diplococci
thousands strong.
As he buzzes 'round your table, finding food where he is able
He is scattering bacilli all along.

In the morning I'm awakened when the day is scarcely breaking
And I start the day by cussing at the tickling and the buzzing
'round my face.
I'd be very glad to slumber for at least an hour longer
But the pesky flies wont give me any peace.

I have met the Jersey "skeeter" and I do not like him either,
I have had my temples bleeding where the small black flies were feeding
And "no-see-ems" very nearly drove me mad.
But for sheer exasperation and the wrecking of my patience
I have never seen a pest that's half so bad.

So wherever you may find him with his trail of dirt behind him,
In your house or in your stable, feeding at your dinner table
on the sly.
With fly paper, trap or swatter or with formalin in water
SWAT THE FLY!

—*Philip H. Pope.*

Science News-Letter, July 30, 1927

GEOLOGY

Telescopes at Grand Canyon

Telescopes will soon be used to allow visitors to the Grand Canyon to inspect the latest geological discoveries in the depths of nature's great gully. Scientists are at work unearthing fossil foot-prints and other geological wonders in the Grand Canyon National Park. Visitors will be taken to the actual sites but an observatory situated on the Canyon's rim will allow a preliminary introduction to the various discoveries.

Science News-Letter, July 30, 1927

The Problem of Translation—

¶Science, probing the unknown universe, writes its findings in cryptic language. A stellar galaxy shining faintly in the heavens hides its splendor and its immensity in numbers and formulæ; a minute germ has thrust upon it a long Latin name. With the aid of such scientific shorthand and such technicalities, science pushes on to new discoveries and new heights.

¶Yet the facts and the methods of science must penetrate and permeate the whole fabric of civilization if the world is to become an increasingly better place to live in. The man in the street, the child in the school, the merchant in the counting house, the judge on the bench, the priest in the temple, all of those who make the world, must know, appreciate, understand and cherish the spirit of research and the power of thought.

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